

AMENDMENTS TO THE SPECIFICATION:

Please amend the specification at page 6, line 24 through page 8, line 10 as follows:

With reference to FIGURE 3, a free-space optical cross connect apparatus **300** is employed in a Dense Wavelength Division Multiplexer (DWDM) system. The cross connect apparatus **300** brings together many fibers and facilitates the addition, subtraction, and/or rerouting of individual wavelengths. More particularly, multiple optical signals are delivered at multiple wavelengths via an input fiber **302** to a demultiplexer **304**. In other words, during transmission, information is packaged within phased modulated carriers and superimposed on the fiber. The optical signals are received and demultiplexed or separated by the demultiplexer **304** into various wavelengths carried along incoming fibers **310₁,..., 310_n, 310_a...310_x** which enter the optical cross connect. As is described more fully below, the optical cross connect **300** includes a plurality of microelectromechanical system (MEMS) mirror arrays, which serve to redirect the demultiplexed signals into various outgoing fibers **320₁,..., 320_n, 320_a...320_x**. The redirected signals are superimposed or multiplexed onto an output fiber **324** by a multiplexer **330**.

With reference to FIGURE 4 and continuing reference to FIGURE 3, in one embodiment, the optical cross connect apparatus **400** includes a base member **402**, an array of optical switch devices **406**, and a plurality of input fibers **410₁, 410₂, ..., 410_n, 410_a, 410_b...410_x** and output fibers **420₁, 420₂, ..., 420_n, 420_a, 420_b...420_x**. The array of optical switch devices **406** are operatively connected to the base member **402** and, in one embodiment, arranged in a plurality of columns and rows. However, it is to be appreciated that the optical switch devices may be arranged in a plurality of configurations operative to switch or otherwise selectively redirect light beams from one or more of the input fibers **410₁, 410₂, ..., 410_n, 410_a, 410_b...410_x** to one or more of the output fibers **420₁, 420₂, ..., 420_n, 420_a, 420_b...420_x**.

More particularly, each optical switch device **406** includes a base member **402**, a reflective panel **407** and an actuator **409**. The reflective panel **407** is pivotally connected to the base member **402** and moves in an unbiased manner between a reflective state and a non-reflective state. Artisans will appreciate that in the reflective state, the reflective panel is disposed substantially perpendicularly relative to the base member. Conversely, in the non-reflective state, the reflective panel is disposed in a facially opposing relationship with the base member.

In one embodiment of the present invention, the plurality of optical switch devices within the optical cross connect are microelectromechanical system (MEMS) mirrors. More particularly, with reference to FIGURE 5, the optical cross connect **500** includes a first MEMS mirror **506₁**, **506_a** positioned to receive one or more incoming light beams **530** from at least one input fiber or source **510₂**, **510_b** within a local target area **534** on a reflective surface. Before the light falls on a particular MEMS mirror, the mirror is positioned or aimed to reflect light along a selected path. The path along which the light travels corresponds to a located of a selected target, in this case, output fiber **520₃**, **520_c**. For some targets, such as an optical fiber, it is desirable that the light being transmitted to the target be substantially parallel to the normal axis of the target. In the embodiment illustrated in FIGURE 5, if the first MEMS mirror **506₁**, **506_a** were to reflect light directly to a fiber optic target, it may cause the light to be nonparallel to the normal axis of the target. To address this problem, a second MEMS mirror **506₂**, **506_b** is provided. The first MEMS mirror **506₁**, **506_a** reflects light beam **530** to the second MEMS mirror **506₂**, **506_b**, which is aligned with the axis of target output fiber **520₃**, **520_c** and reflects the light parallel to the preferred axis of the target. As is described more fully below, to reduce heating of the local target area **534** for each MEMS mirror, a heat sink layer **512** is provided between the reflective layer **514** and the substrate layer **516**.